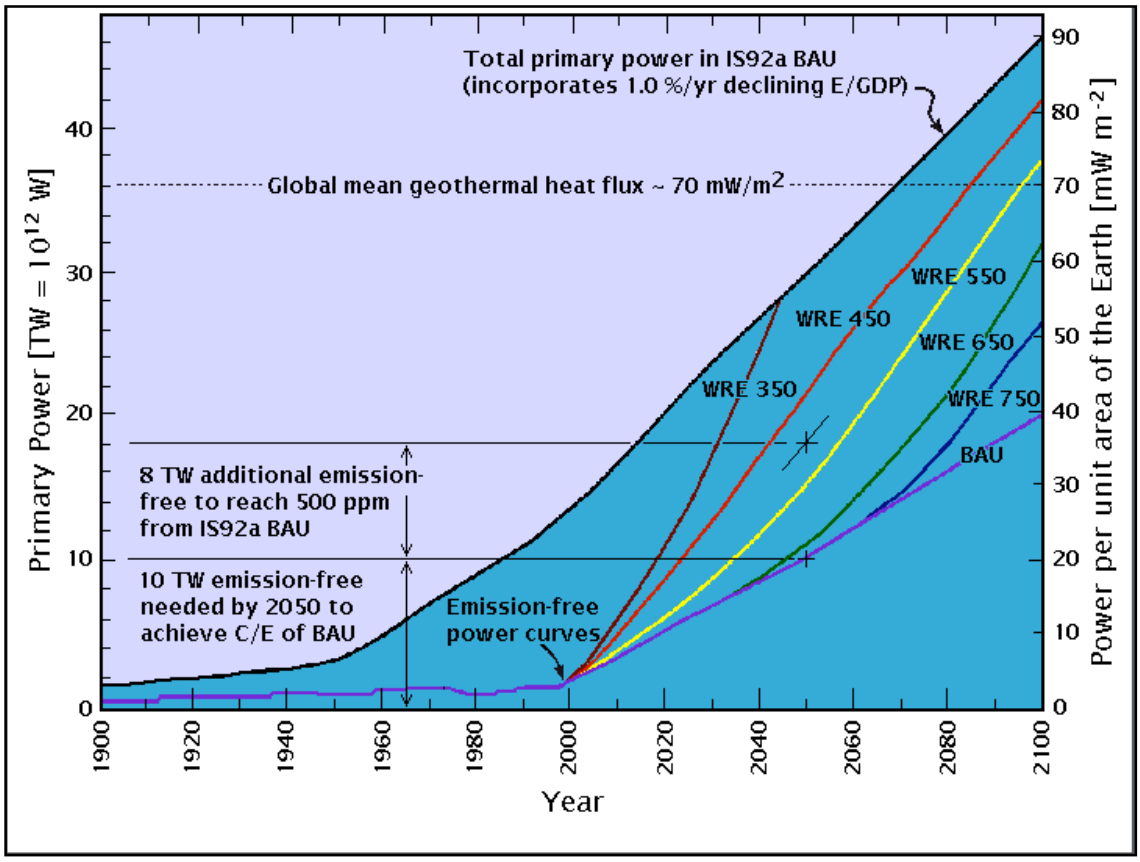
Supplementary Remarks by M. Hoffert on the Original CCTP Plan

This CCTP R & D Plan would be strengthened and would be a far more effective policy tool if the problem to be solved were defined by the quantity and timing of CO2 emission-free-power and/or efficiency improvements needed to stabilize climate at various levels of atmospheric CO2, or of global warming, as the global economy grows at projected rates of 2-3%/yr.



The future path is unknowable but emission-free primary power levels needed to attain the WRE stabilization scenarios levels for economic growth and fossil energy assumptions of the IPCC IS92a business-as-usual (BAU) scenario.

Primary and emission-free power growth in the previous century is also shown. [Note the emission-free-power growth rate discontinuity in the vicinity of "now," and the subsequently large growth in emission-free energy supply just needed for BAU – with progressively larger ramp-ups for various stabilization levels.] This is the real problem. The Manhattan Project didn't aim to explore nuclear weapons in general; it's goal was building a Bomb before the end of WW II. The Apollo Program didn't aim at exploring manned spaceflight in general; it's goal was putting a (US) man on the Moon by the end the 60s. So too does the CCTP program need a more concrete goal; specifically, I'm arguing, some combination of terawatts from supply and negaterawatts" from demand sufficient to stabilize

global warming at tolerable levels. One doesn't have to advocate what level at this point. That should be publicly debated, perhaps in Congress. In any case this administration has clearly stated its opposition to specific targets. Avoiding "dangerous anthropogenic interference with the climate system," the stated UN FCCC goal, was undefined in that document – though melting Arctic sea ice and tundra and increasing hurricane intensity make it more timely than ever to do so. Tony Blair at the recent Exeter conference in the UK set an upper limit of 2 degrees Celsius global warming. This might be cited as an example of thinking by a close US ally.

Such a goal implies terawatts of emission-free power in the coming decades (and/or negaterwatts from efficiency improvements) -- as is well documented in peer-reviewed literature. Not to be overly alarmist, but if current GDP growth rates continues, the latter half of the 21st century is a climatic disaster waiting to happen. To address this realistically, a conceptual framework similar to that described above needs to be up front of this Strategic R & D Plan; however challenging the goal may be & however much it requires international cooperation. Otherwise what we have is a shopping list, well-motivated & interesting perhaps, but uncoupled from the actual problem.